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(no date)

ATTACHMENT I

Comment Sheet

Interim Status Closure Plan Review
[40 CFR Part 265]

Section Comment

I. **GENERAL CLOSURE REQUIREMENTS**
[40 CFR 265 Subpart G]

A. Closure Performance Standards:
[40 CFR 265.111]

Describe how closure minimizes the need for post-closure maintenance and controls, minimizes, or eliminates post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or waste decomposition products to the ground or surface waters or to the atmosphere. Include detailed analyses of the hazardous wastes.

Table 1 of the submitted closure plans is not sufficient since it relies on the use of proposed facilities and indicates that closure cannot begin until EPA grants approval for these proposed facilities. It should be noted that EPA approval was granted for the construction of certain proposed facilities in July 1987, but Proteco has failed to take advantage of these approvals.

The closure plans must address the worst case closure scenario and must provide for the possibility that closure will occur without the availability of the proposed new facilities.

Proteco's statement that this closure scenario is necessary because "No other disposal method is currently available on the island to provide the same level of protection to human health and the environment as the processing of on-site wastes in the proposed facilities" is both irrelevant and unacceptable. Proteco must submit closure plans that are capable of being implemented immediately. Therefore, the closure plans should provide for adequate closure in-place (and associated post-closure monitoring) or for off-site shipment for adequate treatment and disposal.

The proposed contingent closure plan (i.e., if approval for the proposed units is not granted, Proteco would construct a dedicated landfill cell on-site and use a temporary stabilization/fixation facility for treatment) is also presently unacceptable. The construction of a landfill cell would require Proteco to obtain a permit. Since Proteco has been unable to submit a technically acceptable permit application for land disposal units thus far (e.g., design and installation of an adequate ground water monitoring system, liner/waste compatibility, financial insurance, liability insurance, etc.), EPA has no confidence that Proteco would be able to do so for closure.

The closure plans should include a detailed description of the run-on and run-off controls that currently exist on-site and the controls that will be constructed as a part of the closure process.

It is not appropriate to assume that all excavated wastes, residues, and contaminated soils will be processed through a stabilization/fixation facility in light of the land disposal restrictions rule. Thus far, stabilization processes have only been included as best demonstrated available treatment (BDAT) for a limited number of waste codes (e.g., inorganics). Stabilization is not considered to be appropriate for wastes containing organics.

The closure plans must include a waste analysis plan that provides appropriate test methods and procedures to ensure compliance with the land disposal restrictions rule (40 CFR Part 268). Proteco must be able to identify and properly characterize all wastes generated or removed at closure to determine if they are restricted. If treatment is conducted, Proteco must be able to determine if the wastes meet the specified treatment levels. Prior to placement of any wastes into a land disposal unit, Proteco must ensure that the placement of those wastes is not prohibited.

B-1. Description of partial and/or final closure:
[40 CFR 265.112(b)(1)]

Although partial closure (closure of some units) may be imminent, due to the fact that a comprehensive plan has not yet been approved, this plan must provide a complete and technical description of the closure process for each closing unit and for final facility

1) The reasoning behind and procedures for closure are understandable;

2) The schedules can be justified;

3) Cost estimates can be justified;

4) The partial closure plans can be determined to be consistent with the overall facility closure plan; and

5) Financial assurance can be judged to be adequate.

The submitted closure plans are not adequate since they require simultaneous acceptance and approval of all of the proposed closure plans. Proteco must submit a stand-alone closure plan for each unit. While it may be appropriate to submit closure plans for all closing units as one document since many of the items (e.g., waste analysis, decontamination procedures, etc.) are common to each unit, the Agency must be able to approve those plans that are complete while indicating that closure plans for other units may still be deficient.

B-3a. Estimate of the maximum inventory of hazardous wastes:
[40 CFR 265.112(b)(3)]

Describe the maximum inventory of hazardous waste (volume and type) in storage and/or in treatment at any time during the life of the facility.

Provide supporting calculations for estimated amount of hazardous wastes, including residues, in all treatment and storage units and the maximum amount of contaminated soils and residues found in and around those units.

Table 2 must be updated to indicate the maximum inventory of wastes in each unit at this time. The calculation cannot include any expected reductions due to evaporation that may occur prior to initiation of the closure process.

B-3b. Detailed description of the removal of hazardous waste inventory.
[40 CFR 265.112(b)(3)]

The provided description of the removal and characterization of wastes, residues, and contaminated soils is much too general. This information must be provided in detail with a step-by-step description of each process. The description cannot be conceptual and should clearly indicate the criteria to be used for all decisions that need to be made during closure.

B-3c. Detailed identification of, and type of off-site hazardous waste management units.
[40 CFR 265.112(b)(3)]

Specify the type of off-site hazardous waste units. Include:

1) Description of treatment or disposal methods of the final treatment, storage, and disposal facility (TSDF); and

2) Operating status of the TSDF (i.e., interim status or permitted facility). Include EPA ID number, if applicable.

Proteco does not have existing treatment, storage and disposal facilities on-site and the proposed facilities have not yet been constructed although approval for this construction was granted in July 1987; therefore, the closure plans must anticipate that all wastes and contaminated materials removed at closure will be sent to an off-site TSDF.

B-4. Description of decontamination and removal of hazardous waste residues:
[40 CFR 265.112(b)(4) and 265.114]

Provide a detailed description of the steps needed to remove or decontaminate all hazardous waste residues, contaminated containment system components, system components, equipment, structures, and soils during partial and final closure. The required description includes, but is not limited to criteria for determining the extent of decontamination necessary to satisfy the closure performance standard, methods for sampling and testing surrounding soils, procedures for cleaning equipment and removing contaminated soils, and methods for properly disposing of contaminated wastes, residues, and soils.

each process. The description cannot be conceptual in nature and should clearly indicate the criteria to be used for all decisions that need to be made during closure. The closure plan must provide details of the sampling and testing that will be conducted to verify that all contaminated materials have been removed.

Composite samples are not acceptable for closure since composite sampling may hide or dilute "hot spots" of contamination. A representative sampling program with a statistically significant number of discrete sampling points must be used. The closure plan must also clearly explain the statistical procedures to be used and provide a justification for the use of these statistics. If a statistical procedure is used that is not taken from SW-846, then Proteco must also provide a demonstration of the validity of the selected statistical procedure.

The description of the sampling procedures and the quality assurance/quality control (QA/QC) procedures must be greatly expanded and must conform to Region II's protocols, including data validation. For your convenience, another copy of the Region II Quality Assurance Manual is included as Attachment IV. Please note that much of this material had been previously provided to Proteco for guidance in preparing sampling plans, but was apparently not consulted when preparing the latest closure plan revisions.

The closure plans cannot include a list of the analytical procedures that <u>may</u> be used. The closure plans must clearly indicate the specific analytical procedures (including their detection limits) that will be used for each closing unit and provide a justification for the choice of those procedures based on the wastes previously disposed (or suspected of being disposed) in those units.

The closure plans must indicate the specific chain-of-custody procedures to be used; not just state that "procedures identified by EPA" will be used.

Decontamination procedures cannot rely on the availability of the proposed truck wash facility. The closure plans must provide for the use of dedicated

The use of large volume box containers for the temporary storage of contaminated soils may be acceptable. However, EPA cannot approve this temporary storage until adequate design, operation, and maintenance plans for such a unit are approved.

Demonstration of adequate financial assurance and liability insurance is also required for EPA to consider any temporary storage at the Proteco site.

B-5. Detailed description of other activities necessary for closure:
[40 CFR 265.112(b)(5)]

Provide a detailed description of any other activities necessary during partial and final closure to ensure that partial and final closure satisfy the closure performance standard, including, but not limited to, groundwater monitoring, leachate collection, and run-off and run-on control.

B-6. Detailed Schedule for Closure:
[40 CFR 265.112(b)(6) and 265.112(b)(7)]

Provide the date of closure and a schedule for final closure of each hazardous waste management unit and for final closure of the facility. Include:

1) Total time required to close each hazardous waste management unit; and

2) Time required for intervening closure activities which allow tracking of the progress of partial or final closure (examples: milestone chart or table).

Figure 1 of the submitted closure plans is not sufficient since it relies on the use of proposed facilities and indicates that closure cannot begin until EPA grants approval for these proposed facilities. It should be noted that EPA approval was granted for the construction of certain proposed facilities in July 1987, but Proteco has failed to take advantage of these approvals.

The closure schedule cannot rely on the construction schedule for proposed units or the issuance of a final permit to Proteco. The closure plans must be implemented within 30 days after approval is granted.

B-9. Wastes treated, removed, or disposed of within 90 days and extensions of time period:
[40 CFR 265.113(a)]

The closure schedule must show that within 90 days of receiving final approval of the plan, all wastes will be treated, removed from the site, or disposed of on-site in units that are permitted to receive those wastes.

The closure schedule cannot rely on the construction schedule of proposed units or the issuance of a final permit to Proteco. The closure plans must indicate that all wastes will be removed from site within 90 days after approval is granted.

Any request for extension of closure time must be substantiated by the demonstrations required by 40 CFR 265.113(a).

B-10. Closure completed and extensions of time period:
[40 CFR 265.113(b)]

The closure schedule must show that closure will be completed within 180 days after approval of the closure plan.

Although Proteco has included a request for an extension of the 180 day closure limit in the submitted closure plan, EPA is unable to evaluate this request since Proteco has not submitted the justification required by 40 CFR 265.113(b).

C-1. Certification of Closure:
[40 CFR 265.115]

The closure plan must state that within 60 days of completion of partial closure and of final closure, certification will be submitted, both by the owner or operator and by an independent registered professional engineer, that the facility has been closed in

C-2. Survey Plat:
[40 CFR 265.11]

No later than the submission of the certification of closure of each hazardous waste disposal unit, the owner or operator must submit to the Local Zoning Authority or other authority with jurisdiction over local land use and to the Regional Administrator, a survey plan indicating the location of landfill cells or other hazardous waste disposal units with respect to permanently surveyed benchmarks. The plan must be prepared and certified by a professional land surveyor. The plat filed with the Local Zoning Authority or authority with jurisdiction over local land use must contain a note, prominently displayed, stating the owner's or operator's obligation to restrict disturbance of the hazardous waste disposal unit in accordance with applicable Subpart G Regulations.

The closure plans must identify the permanently surveyed benchmarks that will be used for this purpose. All plans, maps, and diagrams used in the closure plan must be prepared in reference to these benchmarks.

D-1. Post-Closure Plan Requirements:
[40 CFR 265.117, 265.118, 265.228(c), and 265.310]

A post-closure permit application must be submitted for all units in which waste will remain at closure. The post-closure plan must indicate that post-closure care will continue for 30 years.

An outline of the post-closure activities is not acceptable. A complete and detailed post-closure plan is required for each land disposal unit where wastes will remain in place and for the entire site as necessary.

Unless demonstration of compliance with financial assurance and liability insurance, and other assurances (e.g., adequate and qualified staffing, availability of equipment and supplies, etc.) along with a demonstration that ground water contamination has not occurred, are submitted along with the closure plan, it must be assumed that clean closure is not a viable option and that all land disposal units will be closed

D-1a. Post-Closure Monitoring:
[40 CFR 265.117(a)(1) and 265.118(c)(1)]

Describe the planned monitoring activities and frequencies at which they will be performed to comply with Part 265 Subparts F, K, and N during the post-*closure care period.*

An adequate ground water monitoring system must be installed for post-closure monitoring (see Attachment III) and a detailed description of the monitoring activities must be submitted.

D-1b. Post-Closure Maintenance:
[40 CFR 265.117(a)(1) and (265.118(c)(2)]

Describe the planned maintenance activities and frequencies at which they will be performed to ensure:

1) The integrity of the cap or other containment systems in accordance with the requirements of Part 265 Subparts K, and N; and

2) The function of the monitoring equipment in accordance with the requirements of Part 265 Subparts F, K, and N.

The information provided in the post-closure inspection plan is not adequate. Detailed, step-by-step procedures must be included in the post-closure plan.

D-2. Post-Closure Security:
[40 CFR 265.117(b)(1) and (2)]

Demonstrate that there will be adequate security at the closed site during the post-closure period if either:

1) Wastes are to remain exposed after completion of closure; or

2) Access to the closed site by the public or domestic livestock may pose a hazard to human health.

D-4. Notice to Local Zoning Authority:
[40 CFR 265.116 and 265.119(a)]

permanently surveyed benchmarks. The plat must contain a note clearly stating the owner/operator's obligation to restrict disturbance of the site as specified in Section 265.117(c). Coordinates must be provided for the surveyed benchmarks.

In addition to the survey plat, provide a copy of the record indicating the type, location and quantity of *hazardous wastes disposed of within each cell or area of the facility. Waste disposed of before 1/12/81* should be identified as accurately as possible based on owner/operator knowledge or other records kept at the facility. This record also is to be submitted to the local land authority.

D-5. Notice in Deed:
[40 CFR 265.119(b)(1)]

Provide a copy of the notice or notation recorded in the deed to the facility property, or on some other instrument which is normally examined during title search, that will in perpetuity notify any potential purchaser of the property that:

1) The land has been used to manage hazardous wastes; and

2) Its use is restricted under 40 CFR 265.117(c).

D-6. Certification of Completion of Post-Closure Care:
[40 CFR 265.120]

Indicate that within 60 days after completion of post-closure care, the owner or operator will submit, by registered mail, a certification that post-closure care has been completed in accordance with the approved post-closure plan. The certification must also be signed by an independent, registered, professional engineer.

E-1. Cost estimate when closure is most expensive:
[40 CFR 265.142(a)]

Provide a copy of the up-to-date closure cost estimate, calculated to cover the cost of closure when the cost would be greatest. The closure cost estimate must be based on the costs of having a third party, neither a parent nor a subsidiary of the owner/operator, close

Provide a detailed cost estimate that includes a separate line item for each activity or task performed during closure. Support line item estimates with calculations or sub-totals based on unit prices, labor hours, equipment rental rates, disposal fees, and volume or quantity figures.

The closure cost estimate may not include:

1) Any salvage value that may be realized by the sale of hazardous waste, facility structures, or equipment, land or other facility assets at the time of partial or final closure.

2) A zero cost for hazardous wastes that an owner or operator assumes a third party will take at no charge.

The submitted closure cost estimates must be revised to reflect costs of off-site disposal. The cost estimates should not contain the assumption that all excavated wastes will be treated by stabilization since the land disposal restrictions do not recognize this as an adequate treatment option for many waste codes.

F. Financial Assurance for Closure:
[40 CFR 265.143]

Provide a copy of the established financial assurance mechanism for facility closure. The mechanism must be one of the following:

- Closure trust fund: [40 CFR 265.143(a)];
- Surety bond guaranteeing payment into a closure trust fund: [40 CFR 265.143(b)];
- Closure letter of credit: [40 CFR 265.143(c)];
- Closure insurance: [40 CFR 265.143(d)];
- Financial test and corporate guarantee: [40 CFR 265.143(e)]; or
- Multiple financial mechanism: [40 CFR 265.143(f)].

F-6. Use of Multiple Financial Mechanisms:

Provide a copy of a combination of trust agreements, surety bonds guaranteeing payment into a closure trust fund, letters of credit, or insurance, together which provide financial assurance for the amount of closure.

G-1. Post Closure cost estimate:
[40 CFR 265.144(a)]

Provide a copy of the up-to-date post-closure cost estimate. The estimate must be based on having a third party, neither a parent nor a subsidiary of the owner/operator, conduct the post-closure care.

The submitted post-closure cost estimates must be revised to reflect costs of off-site disposal. The cost estimates should not contain the assumption that all excavated wastes will be treated by stabilization since the land disposal restrictions do not recognize this as an adequate treatment option for many waste codes.

H. Financial Assurance for Post-Closure:
[40 CFR 265.145]

Provide a copy of the established financial assurance mechanism for facility post-closure. The mechanism must be one of the following:

- Post-closure trust fund: [40 CFR 265.145(a)];
- Surety bond guaranteeing payment into a post-closure trust fund: [40 CFR 265.145(b)];
- Post-closure letter of credit: [40 CFR 265.145(c)];
- Post-closure insurance: [40 CFR 265.145(d)];
- Financial test and corporate guarantee: [40 CFR 265.145(e)]; or
- Multiple financial mechanisms: [40 CFR 265.143(f)].

H-6. Use of multiple Financial Mechanisms:
[40 CFR 265.145(f)]

insurance, together which provide financial assurance for the amount of post-closure.

I-1. Coverage for Sudden Accidental Occurrences:
[40 CFR 265.147(a)]

Provide documentation of compliance with applicable liability requirements for sudden accidental occurrences. Liability coverage must be maintained for sudden accidental occurrences in the amount of at least $1 million per occurrence with an annual aggregate of at least $2 million. Liability coverage may be demonstrated in one of three ways:

- Endorsement, with the wording specified by [40 CFR 265.147(a)(1)];
- Financial test for Liability Coverage [40 CFR 265.147(a)(2)]; or
- Use of Multiple Insurance Mechanisms [40 CFR 265.147(a)(3)].

Please note that Proteco's intent to close its interim status units does not relieve it of its obligation to maintain liability coverage. In accordance with 40 CFR 265.147(e), the owner or operator is required to maintain liability coverage for the facility at least until the Regional Administrator has accepted certifications of closure from both the owner or operator and an independent registered professional engineer that final closure has been completed in accordance with an approved closure plan.

I-2. Endorsement or Certification:
[40 CFR 265.147(a)(1)]

Submit a signed duplicate or original of the Hazardous Waste Facility Liability Endorsement, with the wording specified by 40 CFR 264.151(i), or of a Certificate of Liability Insurance, with the wording specified by 40 CFR 264.151(j).

I-5. Coverage for non-sudden accidental occurrences:
[40 CFR 265.147(b)]

Provide documentation that liability coverage for non-

- Financial Test for Liability Coverage [40 CFR 265.147(b)(2) and 265.147(f)]; or

- Use of Multiple Insurance Mechanisms [40 CFR 265.147(b)(3)].

II. **CLOSURE OF CONTAINER STORAGE AREAS** (For Units 4, 8, and 19)

B-1. Detailed description of steps necessary to close the container storage area:
[40 CFR 265.112(b)(1)]

Provide a complete and detailed technical description of the closure process such that:

1) The reasoning behind and procedures for closure are understandable;

2) The schedule can be justified;

3) Closure cost estimates can be substantiated;

4) The partial closure plan can be determined to be consistent with the overall facility plan; and

5) Financial assurance can be judged to be adequate.

B-2. Identification of maximum extent of operation of the container storage area:
[40 CFR 265.112(b)(2)]

Provide a complete and detailed physical description of the container storage areas, including the type of construction materials, so that the testing, removal, and decontamination procedures can be judged to be adequate. A site map, drawn to scale, should be included.

B-3a. Estimate of the maximum inventory of hazardous waste in the container storage area:
[40 CFR 265.112(b)(3)]

Provide an estimate of the maximum inventory of hazardous wastes (volume and type) ever on-site at any time during the life of the container storage area. Include residues. Provide supporting calculations for estimated amounts.

volume. The total volume of the containers must be used.

B-3b. Detailed description of removal of hazardous waste inventory:
[40 CFR 265.112(b)(3) and 265.114]

Specify the disposition of the hazardous waste inventory in containers at the time of closure. Include:

1) The quantity of hazardous wastes to be sent off-site;

2) A description of any treatment performed prior to transport, if applicable;

3) Time required to remove the waste off-site; and

4) Distance to the final Treatment, Storage, and Disposal Facility (TSDF).

The transfer of drums from Unit 4 to Unit 19 is not appropriate. Proteco must provide for the removal and treatment of all wastes at closure; not the transfer of these wastes to another on-site facility. The closure plans cannot assume that EPA will approve of the temporary storage of wastes until proposed new units are available.

B-3c. Identification of type of off-site hazardous waste management unit(s):
[40 CFR 265.112(b)(3)]

Specify the type of off-site hazardous waste management units. Include:

1) Description of treatment or disposal methods at the final TSDF; and

2) Operating status of the TSDF (i.e. interim status or permitted facility). Include EPA I.D.number, if applicable.

B-4a. Criteria for determining the extent of decontamination necessary:

for, appropriate hazardous wastes or constituents in a sampling or groundwater monitoring program.

B-4b. Detailed Description of Decontamination Process:
[40 CFR 265.112(b)(4)]

Provide a detailed description of the steps needed (proposed plan) to remove or decontaminate all hazardous waste residues, and contaminated containment system components, equipment, structures, and soils.

B-4c. Procedures for cleaning equipment and structures and removing contaminated soils, and description of decontamination procedures:
[40 CFR 265.112(b)(4) and 265.114]

Specify the decontamination procedures, such as steam cleaning or flushing with an appropriate solvent. Cleaning agents must be clearly identified. Indicate whether the cleaning agent or solvent is suitable for the types of wastes stored. Describe how contaminated cleaning agents or solvents will be properly managed as hazardous wastes. Specify how cleaning equipment, such as brushes, will be decontaminated or properly disposed of as hazardous waste.

Describe how contaminated soils will be removed from the surrounding area. Provide a detailed description of the steps including, but not limited to, procedures for removing contaminated soils, methods for sampling and testing surrounding soils, and methods and locations of final disposal.

B-4d. Detailed description of removal of hazardous waste residues:
[40 CFR 265.112(b)(4) and 265.114]

Provide a detailed description of the steps needed to remove or decontaminate all hazardous waste residues; and methods for sampling and testing. Indicate how and where the contaminated residues are to be disposed. Include:

1) The quantity of contaminated hazardous waste residues to be sent off-site;

2) Time required to remove the hazardous waste residues off-site;

4) Description of treatment or disposal methods at the final TSDF, and

5) Operating status of the facility (i.e. interim status or permitted facility). Include EPA I.D. number, if applicable.

By removing hazardous wastes and residues during partial and final closure, the owner or operator may become a generator of hazardous wastes and must handle that waste in accordance with all applicable requirements of 40 CFR Part 262.

B-4e. Methods for sampling and testing to demonstrate success of decontamination:
[40 CFR 265.112(b)(4)]

Specify a testing program to determine if the standard of decontamination has been met. The testing program must include a description of sampling procedures, test parameters, number and location of sampling points, and analytical methods.

Specify the sampling procedures and demonstrate that the number of samples is sufficient. Indicate how samples are judged to be representative.

Demonstrate that the testing parameters are consistent with those selected as criteria for decontamination. They must be indicative of the wastes stored at the container storage area.

Identify analytical methods for each parameter. Methods from SW-846 are normally used. A justification must be provided for any analytical methods specified other than those in SW-846.

III. **CLOSURE OF TANK STORAGE UNITS** (Unit 15 and Old Tank Storage Area)

In the following review, the term tank storage unit is meant to include a tank or tanks, the associated piping, support structures, and the underlying containment system.

Please note that the areas that previously contained at least two storage tanks must be closed as well as the current lindane storage tank area.

B. Content of Closure Plan:
[40 CFR 265.112, 265.114, 265.197(a), 265.197(c), and 265.197.(c)(1)]

For tank systems that do not have a containment system as described in 40 CFR 265.193 (b through f) and are not exempt under 40 CFR 265.193(g), a contingent closure plan must also be submitted addressing all requirements of items A through B-4e, B-6 and, in addition, address any item in B-5, C, D, E, and F, as applicable.

B-1. Detailed description of steps necessary to close tank:
[40 CFR 265.112(b)(1)]

Provide a complete and detailed technical description of the closure process such that:

1) The reasoning behind and procedures for closure are understandable;

2) The schedule can be justified;

3) Closure cost estimates can be substantiated;

4) The partial closure plan can be determined to be consistent with the overall facility plan; and

5) Financial assurance can be judged to be adequate.

B-2 Identification of maximum extent of tank storage operation:
[40 CFR 265.112(b)(2)]

Provide a complete and detailed physical description of the tank storage unit, including the type of construction materials, so that procedures for testing, removal, and decontamination can be judged to be adequate. Include a site map, drawn to scale.

B-3a. Estimate of the maximum inventory of hazardous waste in the tank:
[40 CFR 265.112(b)(3)]

Provide an estimate of the maximum inventory of waste (volume and type) in storage and in treatment at any time during the life of the facility in the tank storage unit. Include residues. Provide supporting calculations for estimated amounts.

The maximum inventory is not a percentage if the containment volume. The total volume of the tank must be used.

B-3b. Detailed description of removal of hazardous waste inventory:
[40 CFR 265.112(b)(3) and 265.114]

Specify the disposition of the hazardous waste inventory in the tank at the time of closure. Include:

1) An estimate of the quantity of hazardous wastes sent off-site;

2) A description of any treatment performed prior to transport, if applicable;

3) Time required to remove the hazardous wastes off-site; and

4) Distance to the final Treatment, Storage and Disposal Facility (TSDF).

The sampling and analysis of tank contents must be clearly explained. It cannot be assumed that the tank contents will be treated in the proposed stabilization/fixation facilities. All proposed cleaning additives must be clearly identified and the closure plan must provide a demonstration of the effectiveness and appropriateness of these cleaning additives. The liquids and cleaning residues from the tanks cannot be placed into the Rainwater Basin since this unit lost interim status on November 8, 1988.

B-3c. Identification of, and type of off-site hazardous waste management units:
[40 CFR 265.112(b)(3)]

Specify the type of off-site hazardous waste management units. Include:

1) A description of treatment or disposal methods at the final TSDF; and

2) Operating status of the facility (i.e. interim status or permitted facility). Include EPA I.D. number, if applicable.

B-4a. Criteria for determining the extent of decontamination necessary:
[40 CFR 265.112(b)(4) and 265.197(a)]

Specify the criteria to be used to judge the extent of decontamination required. This will generally be on the basis of detection of, or specific concentrations for, appropriate hazardous wastes or constituents in a sampling or groundwater monitoring program.

B-4b. Detailed description of decontamination steps:
[40 CFR 265.112(b)(4) and 265.197(a)]

Provide a detailed description of the steps needed (proposed plan) to remove or decontaminate all hazardous waste residues, and contaminated containment system components, equipment, structures, and soils.

B-4c. Procedures for cleaning equipment and structures and removing contaminated soils:
[40 CFR 265.112(b)(4), 265.197(a)]

Specify the equipment decontamination procedures, such as steam cleaning or flushing with an appropriate solvent. Cleaning agents or solvents must be clearly identified. Indicate whether the cleaning agent or solvent is suitable for the types of waste stored. Describe how contaminated cleaning agents or solvents will be properly managed as hazardous wastes.

Specify how cleaning equipment, such as brushes, will be decontaminated or properly disposed of as hazardous wastes.

Provide a detailed description of the steps including, but not limited to, procedures for removing contaminated soils, methods for sampling and testing surrounding soils, and methods and locations of final disposal.

B-4d. Detailed description of removal of hazardous waste residues:
[40 CFR 265.112(b)(4), 265.114 and 265.197(a)]

Provide a detailed description of the steps needed to remove or decontaminate all hazardous waste residues during closure including, but not limited to, procedures for removing contaminated waste residues, and methods for sampling and testing. Indicate how and where the contaminated residues are to be disposed.

1) The quantity of contaminated hazardous waste sent off-site;

2) Time required to remove the hazardous waste residues off-site;

3) Distance to the final Treatment, Storage and Disposal Facility (TSDF); and

4) Description of treatment of disposal methods at the final TSDF.

By removing hazardous wastes and residues during partial and final closure, the owner or operator may become a generator of hazardous wastes and must handle that waste in accordance with all applicable requirements of 40 CFR Part 262.

B-4e. Methods for sampling and testing to demonstrate success of decontamination:
[40 CFR 265.112(b)(4) and 265.197(a)]

Specify a testing program to determine if the standard of decontamination has been met. The testing program must include a description of sampling procedures, test parameters, and analytical methods.

Specify the sampling procedures and demonstrate that the number of samples is sufficient. Indicate how samples are judged to be representative. Demonstrate that the testing parameters are consistent with those selected as criteria for decontamination. They must be indicative of the wastes stored at the site.

Identify analytical methods for each parameter. Methods from SW-846 are normally used. A justification must be provided for any analytical methods specified other than those in SW-846.

B-5. Closure with Contaminated Soils Remaining in Place:
[40 CFR 265.197(b) and 265.310(a)]

If tanks are closed which are subject to 40 CFR 265.197(b), then closure and post-closure care must be provided as for landfills in 40 CFR 265.310 and Part 265 Subparts G and H.

The cover design and installation procedures should be thoroughly described. This submission should include:

1) Drawings showing cover layers, thickness, slopes, and overall dimensions;

2) The common name, species, and variety of the proposed cover crop;

3) Descriptions of synthetic liners to be used, strength, thickness, and manufacturer's specifications;

4) Descriptions of and specifications for protective materials placed above and below synthetic liners;

5) *Soil cap characteristics, including thickness and permeability;*

6) Soil cap construction plans including lift sequencing.

For other requirements, refer to 40 CFR 265.310(a).

C. Post-Closure Plan:
[40 CFR 265.117 through 265.120, 265.197(b), 265.197(c)(2), and 265.310(b)]

If the tank system is subject to the requirements of 40 CFR 265.197(b), then a contingent post-closure plan must be provided complying with the post-closure requirements for landfills specified in Subparts G and H of 40 CFR 265. In addition, the following must be part of the contingent post-closure plan.

C-1. Inspection Plan:
[40 CFR 265.197(b) and 265.310(b)]

Describe the inspections to be conducted during the post-closure care period, their frequency, the inspection procedure, and the logs to be kept. The following items, as applicable, should be included in the inspection plan:

1) Security control devices;

2) Erosion damage;

3) Cover settlement, subsidence, and displacement;

4) Vegetative cover condition;

5) Integrity of run-on and run-off control measures;

7) Gas venting system;

8) Well condition; and

9) benchmark integrity.

The rationale for determining the length of time between inspections should also be provided.

C-2. Monitoring Plan:
[40 CFR 265.197(b) and 265.310(b)]

Describe the monitoring to be conducted during the post-closure care period, including, as applicable, the procedures for conducting the following operations and evaluating the data gathered:

1) Groundwater monitoring; and

2) Leachate collection/detection and removal.

C-3. Maintenance Plan:
[40 CFR 265.197(b) and 265.310(b)]

Describe the preventative and corrective maintenance procedures, equipment requirements, and material needs. Include the following items in the maintenance plan, as applicable:

1) Repair of security control devices;

2) Erosion damage repair;

3) Correction of settlement, subsidence and displacement;

4) Mowing, fertilization and other vegetative cover maintenance;

5) Repair of run-on and run-off control structures;

6) Leachate collection/detection system maintenance; and

7) Well replacement and/or redevelopment.

Describe the rationale to be used to determine the need for corrective maintenance activities.

D. Closure and Post-Closure Cost Estimates:
[40 CFR 264.142, 265.144, and 265.197(c)(3)]

Closure and post-closure cost estimates must reflect the costs of complying with the contingent closure and post-closure plans, if those costs are greater than the costs of complying with the closure plan prepared for the expected closure required under 40 CFR 265.197(a).

E. Financial Assurance for Closure and Post-Closure:
[40 CFR 265.143, 265.145, and 265.197(c)(4)]

Demonstrate that financial assurance is based upon the cost estimates developed for the contingent closure and post-closure under 40 CFR 265.197(c)(3).

F. Liability Coverage:
[40 CFR 265.147 and 265.197(c)(5)]

Demonstrate that the contingent closure and post-closure plans meet the financial responsibility requirements for landfills under Subparts G and H of 40 CFR 265.

IV. **CLOSURE OF SURFACE IMPOUNDMENTS** (Units 7, 9, 13, and 17)

B. Content of Closure Plan:

The closure plan should describe if surface impoundments will be closed by removing standing liquids, waste and waste residues, liners, and underlying and surrounding contaminated soil, and demonstrating that the remaining materials are not hazardous (i.e., clean closure), or if closure will be completed with the materials contained in the impoundment in place.

The demonstration required for clean closure must be based on health based standards for all Appendix VIII constituents that were handled at the facility. Merely checking to see if potentially contaminated materials exhibit a "characteristic" is not sufficient.

The demonstration that clean closure has been successfully achieved also requires proof that ground water has not been adversely affected by facility activities (i.e., at least three years of monitoring records from a ground water monitoring system that meets 40 CFR Part 265, Subpart F requirements).

B-1a. Detailed description of steps necessary to close the surface impoundments:
[40 CFR 265.112(b)(1)]

Provide a complete and detailed technical description of the closure process such that:

1) The reasoning behind and procedures for closure are understandable;

2) The schedule can be justified;

3) Closure cost estimates can be substantiated;

4) The partial closure plan can be determined to be consistent with the overall facility plan; and

5) Financial assurance can be judged to be adequate.

The temporary closure plans that were previously submitted for the surface impoundments are no longer appropriate. Proteco must submit closure plans that are capable of being implemented immediately and provide for permanent closure. Therefore, closure of the surface impoundments cannot rely on the availability of proposed new units.

The use of the Rainwater Basin (Unit 13) is not acceptable since this unit lost interim status on November 8, 1988 because it was not in compliance with the minimum technology requirements of RCRA.

B-1b. Identification of maximum extent of operation of the surface impoundments:
[40 CFR 265.112(b)(2)]

Provide a complete and detailed physical description of the impoundments and the surrounding areas, including the type of construction materials, so that the testing, removal, and decontamination procedures can be judged to be adequate. A site map, drawn to scale, must be included.

B-1c. Estimate of the maximum inventory of hazardous waste in the surface impoundments:
[40 CFR 265.112(b)(3)]

Provide an estimate of the maximum inventory of wastes (volume and type) in the surface impoundments at any time during the life of the impoundments. Include residues. Provide supporting calculations for estimated amounts.

The maximum inventory of the surface impoundments must be the volume of all wastes and residues that could be stored in the surface impoundments. The maximum inventory is not a percentage of containment volume. The total volume of waste must be used.

The maximum inventory should address all wastes, residues, and contaminated soils that are present now and cannot anticipate any additional evaporation of liquids prior to initiation of closure.

B-2. Closure of a surface impoundments where the wastes are removed during closure (clean closed):

B-2a. Detailed description of removal of hazardous waste inventory:
[40 CFR 265.112(b)(3), 265.114, and 265.228(a)]

If the contents of the surface impoundments are removed as part of the closure, (i.e. closed clean) specify the disposition and handling of the waste inventory in the surface impoundments at the time of closure. Include:

1) The quantity of hazardous wastes sent off-site;

2) A description of any treatment performed prior to transport, if applicable;

3) Time required to remove the hazardous wastes off-site;

4) Distance to the final Treatment, Storage and Disposal Facility (TSDF);

5) Methods of handling liquid wastes and sludge, including stabilization processes, if applicable;

6) Description of methods to protect surface and groundwater during removal of impoundment contents;

7) Description of methods to control wind dispersal;

8) Any special handling procedures required for ignitable and reactive wastes, as applicable;

9) Method of hazardous waste removal;

10) Method of transportation; and

11) Loading procedures.

B-2b. Identification of type of off-site hazardous waste management unit(s):
[40 CFR 265.112(b)(3) and 265.228(a)]

Specify the type of off-site hazardous waste management units. Include:

1) Description of treatment or disposal methods at the final TSDF; and

2) Operating status of the TSDF (i.e. interim status or permitted facility). Include EPA I.D. number, *if applicable.*

B-2c. Criteria for determining the extent of decontamination necessary:
[40 CFR 265.112(b)(4) and 265.228(a)]

Specify the criteria to be used to judge the extent of decontamination required. This will generally be on the basis of detection of, or specific concentrations for, appropriate hazardous wastes or constituents in a sampling or groundwater monitoring program. Provide details of the testing program including sampling procedures and analyses to be performed.

B-2d. Detailed Description of Decontamination Steps:
[40 CFR 265.112(b)(4) and 265.228(a)]

Provide a detailed description of the steps needed (proposed plan) to remove or decontaminate all hazardous waste residues, and contaminated containment system components, equipment, structures, soils and liners.

B-2e. Procedures for cleaning equipment and structures:
[40 CFR 265.112(b)(4), 265.114, and 265.228(a)]

Specify the equipment decontamination procedures. Include equipment used during surface impoundment operation and during closure. Cleaning agents or solvents must be clearly identified. Indicate whether the cleaning agent or solvent is suitable for the types of wastes. Describe how contaminated cleaning agents or solvents will be properly managed as hazardous wastes. Specify washing protocols, description of procedures used to collect and dispose of contaminated wash/rinse water, and description of testing and analytical procedures to ensure successful decontamination.

Specify how cleaning equipment, such as brushes, will be decontaminated or properly disposed of as hazardous wastes. Describe the final disposition of disposed equipment.

For equipment that will be disposed, provide the following:

1) List of equipment;

2) Location of disposal; and

3) Criteria to be used during closure to determine if any equipment originally listed for decontamination will be disposed of instead.

B-2f. Detailed description of removal of hazardous waste residues:
[40 CFR 265.112(b)(4), 265.114 and 265.228(a)]

Provide a detailed description of the steps needed to remove or decontaminate all hazardous waste and residues during closure including, but not limited to, procedures for removing contaminated waste residues, and methods for sampling and testing. Indicate how and where the wastes and contaminated residues are to be disposed. Include:

1) The quantity of contaminated hazardous waste residues to be sent off-site;

2) Time required to remove the hazardous waste residues off-site;

3) Distance to the final Treatment, Storage and Disposal Facility (TSDF);

4) Description of treatment or disposal methods at the final TSDF; and

5) Operating status of the facility (i.e. interim status or permitted facility). Include EPA I.D. number, if applicable.

By removing hazardous wastes and residues during partial and final closure, the owner or operator may become a generator of hazardous wastes and must handle that waste in accordance with all applicable requirements of 40 CFR Part 262.

B-2g. Methods for sampling and testing to demonstrate success of decontamination:
[40 CFR 265.112(b)(4) and 265.228(b)]

Provide criteria to be used to judge the success of the decontamination efforts. This will generally be based upon detection of or specific concentrations for appropriate hazardous wastes or constituents.

Specify a testing program to determine if the standard of decontamination has been met. The testing program *must include a description of sampling procedures, test parameters, and analytical methods.*

Specify the sampling procedures and demonstrate that the number of samples is sufficient. Indicate how samples are judged to be representative.

Demonstrate that the testing parameters are consistent with those selected as criteria for decontamination. They must be indicative of the wastes stored in the surface impoundment.

Identify analytical methods for each parameter. Methods from SW-846 are normally used. A justification must be provided for any analytical methods specified other than those in SW-846.

B-3. Closure of disposal surface impoundments:

Disposal impoundments (i.e, impoundments that are not clean closed) must be closed and post-closure care provided as for a landfill under 40 CFR 265.310(a) and Subpart G.

Closure plans for surface impoundments in which wastes or contaminated materials are to remain at closure must describe how the unit will be closed, including a description of the final cover to be established and its expected performance. In addition, applicable items from Section B-2 above should also be addressed.

B-3a. Disposal Impoundments:
[40 CFR 265.228(c)]

If wastes are to remain in the impoundments after closure, describe the methods used to prepare the wastes for final cover.

B-3b. Elimination of Liquids:
[40 CFR 265.228(c)]

Describe how free liquids will be removed or solidified at closure.

B-3c. Waste Stabilization:
[40 CFR 265.228(c)]

Describe the methods to be used to stabilize remaining wastes to support the final cover, including:

1) Stabilization methods, equipment, and materials;

2) Required bearing strength of stabilized waste;

3) Demonstration of stabilized waste bearing strength; and

4) Methods for bearing strength determination during closure.

B-3d. Cover design:
[40 CFR 265.228(c)]

The cover design and installation procedures should be thoroughly described. This submission should include:

1) Drawing shoring cover layers, thickness, slopes, and overall dimensions;

2) The common name, species, and variety of the proposed cover crop;

3) Descriptions of synthetic liners to be used, strength, thickness, and manufacturer's specifications;

4) Descriptions of and specifications for protective materials placed above and below synthetic liners;

5) Soil cap characteristics, including thickness and permeability; and

6) Soil cap construction plans including lift sequencing.

Proteco should consider the use of a test plot for the construction of any soil liners or covers to be used for closure.

C. Post-Closure Plans:
[40 CFR 265.117 through 265.120, 265228(c), and 265.310(b)]

Provide details of the post-closure plan. Address items under Section I-D; and items C-1 through C-3 below.

C-1. Inspection Plan:
[40 CFR 265.228(c)]

Describe the inspections to be conducted during the post-closure care period, their frequency, the inspection procedure, and the logs to be kept. The following items, as applicable, should be included in the inspection plan:

1) Security control devices;

2) Erosion damage;

3) Cover settlement, subsidence, and displacement;

4) Vegetative cover condition;

5) Integrity of run-on and run-off control measures;

6) Cover drainage system functioning;

7) Leachate collection/detection and removal system;

8) Gas venting system;

9) Well condition; and

10) Benchmark integrity.

The rationale for determining the length of time between inspections should also be provided.

C-2. Monitoring Plan:
[40 CFR 265.228(c)]

Describe the monitoring to be conducted during the post-closure care period, including, as applicable, the procedures for conducting the following operations and evaluating the data gathered:

1) Groundwater monitoring; and

VII. **CLOSURE OF LANDFILLS** (Units 1, 2, 3, 5, 8, 10, 11, 12, and 16)

B-1. Detailed description of steps necessary to close the landfills:
[40 CFR 265.112(b)]

Provide a complete and detailed technical description of the closure process such that:

1) The reasoning behind and procedures for closure are understandable;

2) The schedule can be justified;

3) Closure cost estimates can be substantiated;

4) The partial closure plans can be determined to be consistent with the overall facility plans; and

5) Financial assurance can be judged to be adequate.

B-2. Identification of maximum extent of operation of the landfills:
[40 CFR 265.112(b)(2)]

Provide a complete and detailed physical description of the landfills and the surrounding area, including the type of construction materials, so that the testing, removal, and decontamination procedures can be judged to be adequate. A site map, drawn to scale, must be included.

The geophysical investigation that will be performed to locate the base of the disposal units, the elevation of the leachate mound, and the boundaries and locations of buried drums must be explained in detail and demonstrated to be effective.

B-3. Removal and Management of Hazardous Wastes:

Detailed plans for the excavation, characterization, sampling, storage, and transportation of excavated drums and other materials must also be included in the closure plans. An adequate contingency plan and health and safety plan must also be included for these operations.

B-3a. Estimate of the maximum inventory of hazardous waste in the landfills:
[40 CFR 265.112(b)(3)]

Provide an estimate of the maximum inventory of wastes (volume and type) disposed in the landfills at any time during the life of the landfills. Include residues. Provide supporting calculations for estimated amounts.

The maximum inventory of the landfills must be the sum of the volumes of all the wastes which could be stored in the landfills.

B-4e. Specify the sampling procedures and demonstrate that the number of samples is sufficient. Indicate how samples are judged to be representative.

Demonstrate that the testing parameters are consistent with those selected as criteria for decontamination. They must be indicative of the wastes contained in the landfills.

Identify analytical methods for each parameter. Methods from SW-846 are normally used. A justification must be provided for any analytical methods specified other than those in SW-846.

B-5. Cover Design:

The cover design and installation procedures should be thoroughly described. This submission should include:

1) Drawings showing cover layers, thickness, slopes, and overall dimensions;

2) Common name, species, and variety of the proposed cover crop;

3) Descriptions of synthetic liners to be used, strength, thickness, and manufacturer's specification;

4) Descriptions of and specifications for protective materials placed above and below synthetic liners;

5) Soil cap characteristics, including thickness and permeability; and

6) Soil cap construction plans including lift

Referencing the cap design that was submitted for the proposed landfill units is not sufficient. The closure plan must include a complete, detailed cap design for each closing landfill.

The proposed interim cap for Unit 16 is not acceptable. The closure plan must provide for the immediate and permanent closure of all units.

B-5a. Minimization of Liquid Migration:
[40 CFR 265.310(a)]

Provide engineering calculations showing the proposed cover will provide long-term minimization of liquid migration through the cover.

Stating that surface water infiltration will be controlled by installation of proposed stormwater diversion channels is not sufficient. Detailed designs of the existing and proposed stormwater control systems must be included in the closure plans and must be accompanied by a demonstration that these controls are sufficient.

B-5b. Maintenance Needs:
[40 CFR 265.310(a)(2)

Discuss how the cover system will function effectively with minimum maintenance needs.

B-5c. Erosion and Abrasion:
[40 CFR 265.310(a)(3)]

Provide the following information:

1) Calculations showing that the final slopes will not cause significant cover erosion during construction and throughout the post-closure period;

2) Descriptions of drainage layer materials and their permeabilities;

3) Engineering calculations demonstrating free drainage of precipitation off of and out of the cover;

4) Estimation of the potential for drainage-layer clogging; and

5) Descriptions, drawings, and calculations of the run-on and run-off control and diversion systems, including swales, piping, and ditches.

B-5d. Settlement, Subsidence, and Displacement:
[40 CFR 265.310(a)(4)]

Describe potential cover settlement, subsidence, and displacement, immediate settlement, primary consolidation, and liquidation. Include the following information:

1) Potential foundation compression;

2) Potential soil liner settlement; and

3) Potential waste consolidation and compression resulting from waste dewatering, biological oxidation, and chemical conversion of solids to liquids.

Describe the effects of potential subsidence/settlement on the ability of the final cover to minimize infiltration. Provide an analysis of the stability of slopes and dikes.

B-5e. Cover System Permeability:
[40 CFR 265.310(a)(5)]

Demonstrate that the cover system will have a permeability less than or equal to that of the liner system or natural subsoils.

C. Post-Closure Plan:
[40 CFR 265.117 through 265.120, and 265.310(b)]

Provide details of the post-closure plan. Address this item under Section I-D, and Items C-1 through C-3 below.

C-1. Inspection Plan:
[40 CFR 265.310(b)]

Describe the inspections to be conducted during the post-closure care period, their frequency, the inspection procedure, and the logs to be kept. The following items, as applicable, should be included in the inspection plan:

3) Cover settlement, subsidence, and displacement;

4) Vegetative cover condition;

5) Integrity of run-on and run-off control measures;

6) Cover drainage system functioning;

7) Leachate collection/detection and removal system;

8) Gas venting system;

9) Well condition; and

10) Benchmark integrity.

The rationale for determining the length of time between inspections should be provided.

Detailed design drawings of the toe drains and trenches to be used for leachate collection must be provided along with a demonstration of their effectiveness.

C-2. Monitoring Plan:
[40 CFR 265.310(b)]

Describe the monitoring to be conducted during the post-closure care period, including, as applicable, the procedures for conducting the following operations and evaluating the data gathered:

1) Groundwater monitoring; and

2) Leachate collection/detection and removal.

The observation and sampling of the leachate from the manholes must be fully explained. The specific sampling and analytical methods to be used must be included in the closure plan.

The management of the collected leachate cannot rely on proposed units. The closure plans must provide a management plan for the collected leachate that does not rely on Proteco's ability to obtain a permit for proposed units.

C-3. Maintenance Plan:
[40 CFR 265.310(b)]

Include the following items in the maintenance plan, as applicable:

1) Repair of security control devices;

2) Erosion damage repair;

3) Correction of settlement, subsidence and displacement;

4) Mowing, fertilization and other vegetative cover maintenance;

5) Repair of run-on and run-off control structures;

6) Leachate collection/detection system maintenance; and

7) Well replacement and/or redevelopment.

Describe the rationale to be used to determine the need for corrective maintenance activities.